



Science & Technology Strategy

to make the Nation safer...

June 2007



Homeland
Security

Science and Technology

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE JUN 2007		2. REPORT TYPE		3. DATES COVERED 00-00-2007 to 00-00-2007	
4. TITLE AND SUBTITLE Science & Technology Strategy to Make the Nation Safe				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Department of Homeland Security, Science and Technology , Washington, DC				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 24	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			





Homeland Security

Science and Technology

June 2007

This Science and Technology Directorate Strategic Plan defines how the Directorate identifies priorities, goals, objectives and policy for coordinating the Federal Government's civilian efforts to identify and develop scientific solutions and technological countermeasures to address a wide variety of terrorist and natural threats to the homeland. It illustrates the conduct of this Science and Technology management program through daily collaboration with national laboratories, organic laboratories, and numerous other agencies of government, academia, and the private sector, both domestic and international.

It details the specific organization that I have put in place for the investment portfolios from basic research through advanced technology, demonstration, testing and evaluation (including standards). It is achieved through both intramural and extramural programs in response to the clearly defined needs of my customers, the components of DHS, and their customers, first responders across America. It is this construct and organization which is now better enabling the transfer of technologically enhanced capabilities to Federal, State, local, and tribal entities to keep the homeland safe.

United States leadership in science and technology is of paramount importance to the Nation. University Centers of Excellence and organic DHS and DOE National Laboratories are rapidly being aligned to the current DHS S&T Directorate Organization to perfect cutting edge basic and applied research expertise.

The continuous development and nurturing of a world-class and highly motivated government service workforce is defined. It is this workforce that will execute this plan in the years to come as we prosecute this 'long war.'

A handwritten signature in cursive script that reads "Jay M. Cohen".

The Hon. Jay M. Cohen
Under Secretary
Science and Technology Directorate
Department of Homeland Security



PURPOSE OF THIS REPORT

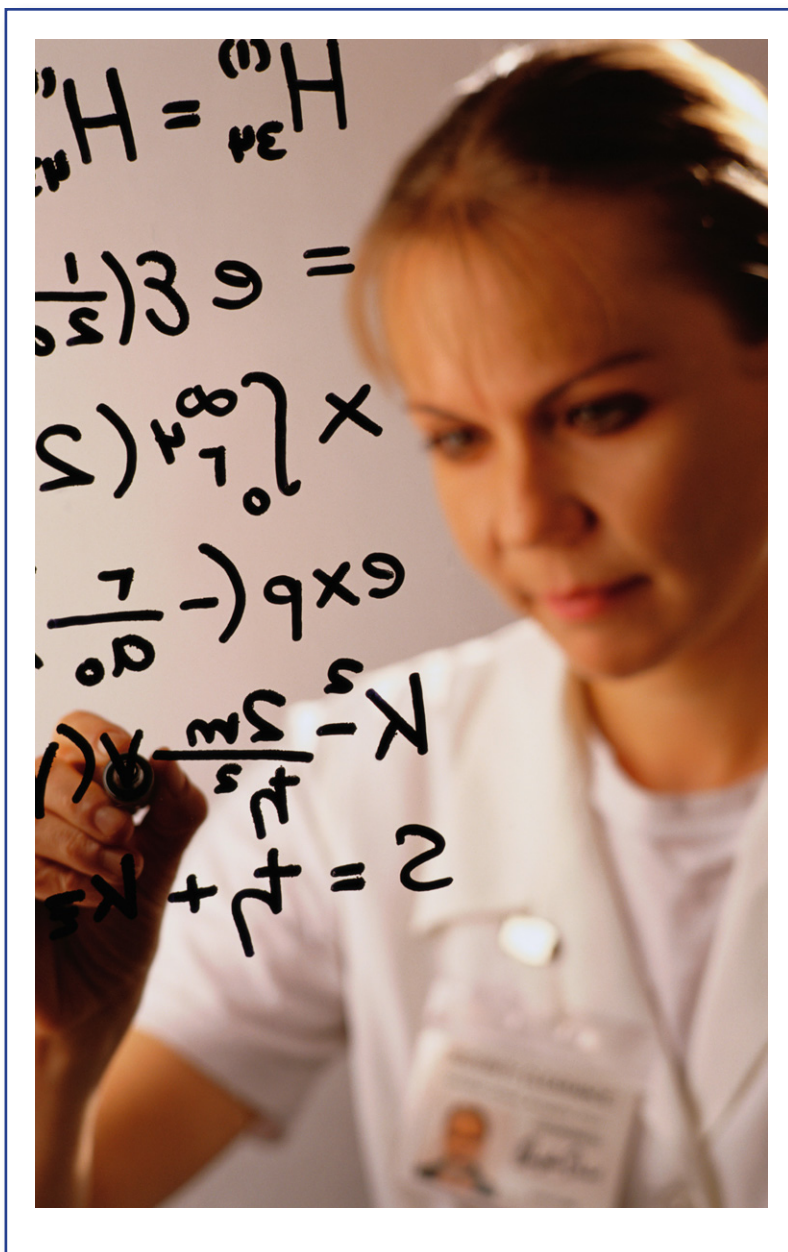
The Homeland Security Act of 2002, which established the Department of Homeland Security (DHS), gives the Science and Technology Directorate (S&T) the responsibility for advising the Secretary on research and development efforts and priorities to support the Department's mission, and conducting basic and applied research, development, testing and evaluation (RDT&E) activities relevant to the Department through both intramural and extramural programs.

In fulfillment of the enabling and follow-on legislation, Secretary Chertoff articulated the following goals for the Department: protect the Nation from dangerous people; protect the Nation from dangerous goods; protect critical infrastructure; build a nimble and responsive emergency response system; build a culture of preparedness; and strengthen and unify DHS

operations and management. Consistent with his goals, this strategic plan provides the strategy and planning

framework to guide the Directorate's activities over the next five years to fulfill its responsibilities. The plan describes the S&T Directorate's organizational framework and the associated customer-focused, risk-balanced research portfolio management strategy that supports the Department's mission of making our Nation more secure. Also addressed is the importance of developing a strong homeland security science and technology national workforce through the professional development of the employees within the S&T Directorate, and through research and

educational opportunities that will enable the long-term homeland security intellectual base.



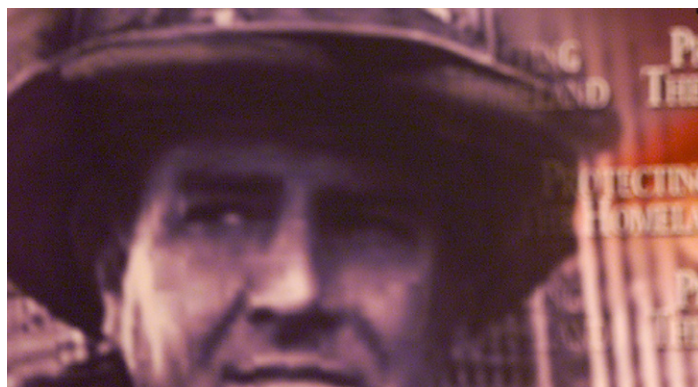


INTRODUCTION

The S&T Directorate's mission is to improve homeland security by providing to our customers, the operating components of DHS and state, local, tribal and territorial emergency responders and officials, state-of-the-art technology that helps them accomplish their missions. A recent review of strategy and technology requirements resulted in a shift in the Directorate's focus to a new strategic approach. This new approach, reflected in a realigned organization and research portfolio management strategy, will allow us to better identify, enable, and transition new capabilities to our customers to better protect the Nation. To that end, the S&T Directorate develops and manages an integrated program of science and technology, from basic research through technology product transition. The managers of this program are predominantly active scientists and engineers in the technical disciplines relevant to Homeland Security. They are guided by a risk-diverse, multi-tiered investment strategy based primarily on the stated needs of our customers balanced with emerging technology opportunities.

The programmatic priorities outlined in this Plan are the result of a process that is largely driven and led by our customers. A majority of the S&T Directorate's investment will be in lower-risk projects dedicated to addressing a customer-defined capability need within three years. About 10 percent of the S&T investment will consist of higher risk innovative prototypical demonstrations, which, if successful, will place advanced technology in the operating components hands much more quickly than the incremental improvements typical of most acquisition programs. About 20 percent of the S&T Directorate's investment portfolio will be in long-

term, basic research conducted primarily in universities and laboratories in areas of enduring homeland security relevance that could lead to revolutionary changes in the way we approach homeland security challenges.



The S&T Directorate's long-term success is dependent on the development of our workforce and on our leadership of the homeland security research enterprise. The leadership principles and management initiatives outlined in this plan support the priority we place on hiring, retaining and motivating a quality workforce. The previous morale problems within the S&T Directorate have been well documented and are understood. Going forward, the S&T Directorate leadership is addressing this problem by placing a priority on treating our workforce with respect and honesty; employing them with meaningful, fulfilling work; and ensuring that they have the resources to effectively and efficiently accomplish their mission. In leading the homeland security research enterprise outside of the S&T Directorate, we are proactively engaged with universities, research institutions, government laboratories, and private industry that conduct research and development in areas important to addressing our customers' homeland security requirements.



THE S&T DIRECTORATE – ALIGNED FOR SUCCESS

The Directorate's R&D functions are aligned into six technical divisions along enduring functional disciplines. This, along with additional offices, allows us to better

meet the Department's strategic goals. These Divisions and disciplines for research, development, testing and evaluation (RDT&E) programs include:

Explosives

Aviation Security; Mass Transit Security; Counter MANPADS

Chemical/Biological

Chemical and Biological Countermeasure R&D; Threat Characterization; Operations; Agro-Defense; Biological Surveillance; and Response & Recovery

Command, Control, and Interoperability (C2I)

Information Management; Information Sharing; Situational Awareness; Interoperability and Compatibility; and Cyber Security

Borders & Maritime Security

Land Borders; Maritime; and Cargo Security

Human Factors

Social-Behavioral Terrorist Intent; Human Response to Incidents; and Biometrics

Infrastructure Protection & Geophysical Science

All Hazard Critical Infrastructure Protection; Regional, State and Local



EXPLOSIVES



CHEMICAL/BIOLOGICAL



COMMAND, CONTROL, AND INTEROPERABILITY



These technical Divisions are linked to three research and development investment portfolio directors in a “matrix management” structure. These three portfolio directors – Director of Research, Director of Transition, and Director of Innovation/Homeland Security Advanced Research Projects Agency (HSARPA) – provide cross-cutting coordination of their respective elements (or thrusts) of the investment strategy within the technical Divisions. Each technical Division is comprised of at least one Section Director of Research who reports to the Director of Research in addition to the Division Director so that a crosscutting focus

sponsors basic and applied homeland security research to promote revolutionary changes in technologies; advance the development, testing and evaluation, and deployment of critical homeland security technologies; and accelerate the prototyping and deployment of technologies that would address homeland security vulnerabilities and works with each of the Division Heads to pursue game-changing, leap-ahead technologies that will significantly lower costs and markedly improve operational capability through technology application.

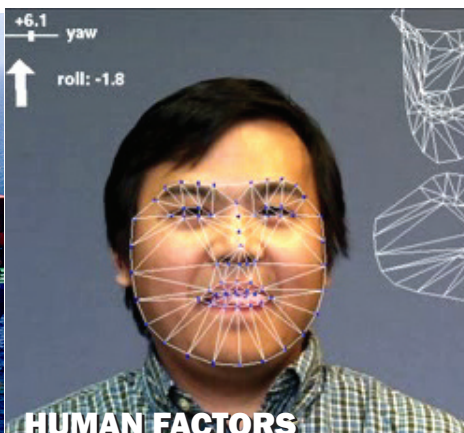
There is unity of effort in cross-cutting coordination

on basic and applied research capability is maintained and leveraged, and a Section Director of Transition who reports to the Director of Transition in addition to the Division Director to help the division stay focused on technology transition. The Director of Transition coordinates within the Department to expedite technology transition and transfer to customers. The Director of Innovation/HSARPA

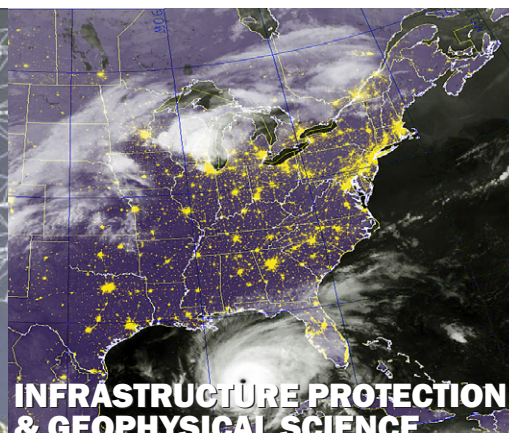
This cross-cutting coordination facilitates unity of effort. The matrix structure also allows the S&T Directorate to provide more comprehensive and integrated technology solutions to its customers by appropriately bringing all of the disciplines together in developing solutions.



BORDERS & MARITIME



HUMAN FACTORS



**INFRASTRUCTURE PROTECTION
& GEOPHYSICAL SCIENCE**



In addition to the six Divisions and the three Directors, the realigned organization features additional offices that support a range of critical missions. These include:

The Test and Evaluation and Standards Division...

works to ensure independent objective testing of technology developments by the six Divisions and across DHS. Additionally, this Office oversees standards development for the effective operation and interoperability of technology;

The Office of Special Programs...

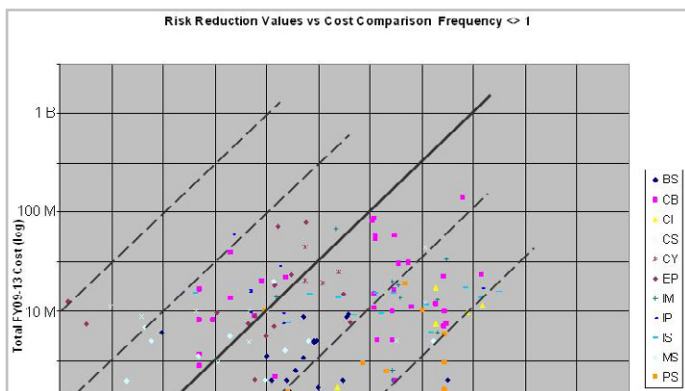
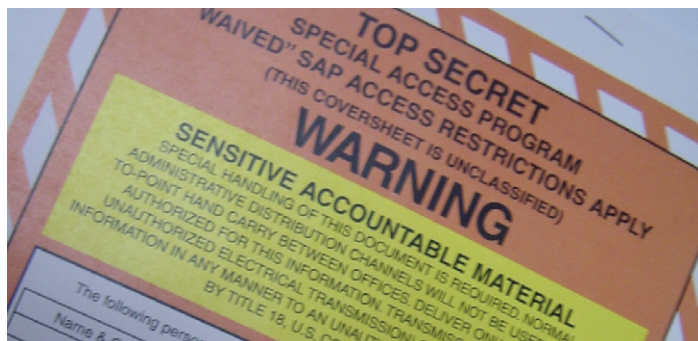
coordinates highly classified projects executed by the six Divisions;

The Office of Operations Analysis...

supports risk analysis and manages the Homeland Security Institute studies and analysis efforts which help form the Department's basis for risk informed decision making; and

The Interagency and International Programs Divisions...

facilitate government-wide science and technology coordination and provides outreach to U.S. allies.





BALANCING S&T DIRECTORATE INVESTMENT

Along with the organizational alignment discussed above, the S&T Directorate has also aligned its investment portfolio to create an array of programs that balance project risk, cost, mission impact, and the time it takes to deliver solutions. The S&T Directorate executes projects across the spectrum of technical maturity and transitions them in accordance with our customers needs. Our investment portfolio is balanced across long-term research, product applications, and leap-ahead “game-changing” capabilities while also meeting mandated requirements. This balanced portfolio ensures that the Directorate maintains a self-replenishing pipeline of future capabilities and products to transition to customers.

The S&T Directorate’s five-year research and development plan details this investment portfolio, outlines the Directorate’s activities and plans at the division level, and includes each division’s research thrusts, programs, and key milestones. It supports the Department’s strategic plan and priorities as well as the S&T’s Directorate priorities. The five-year plan is our roadmap to achieving success; however, our planning process must be flexible and nimble to adjust to a changing homeland security environment. The plan will be updated annually to ensure it continues to address the correct set of priorities, fills our customer’s homeland security capability gaps, and enables a safer homeland.

To ensure that we meet the needs of the Department and the Nation, the S&T Directorate’s customer-focused and output-oriented approach requires that its investment portfolios balance across four investment portfolio categories. These categories along with the Under Secretary’s desired investment targets are as follows:

Basic Research (> 8 years)

The S&T Directorate’s basic research portfolio addresses long-term research needs in support of DHS mission areas that will provide the Nation with an enduring capability in homeland security. This type of focused, sustained research investment has great potential to lead to paradigm shifts in the Nation’s homeland security capabilities.

The S&T Directorate’s basic research program enables fundamental research at our universities, government laboratories and in the private sector. It is vital that basic research be funded at reasonably consistent levels from year to year to ensure a continuity of effort from the research community in critical areas that will seed homeland security science and technology for the next generation of Americans.

The Director of Research is currently evaluating approaches to meaningfully and effectively measure performance in basic research using a process that can be uniformly and transparently applied across the six S&T divisions. The research program’s success will be demonstrated, in part, by peer reviewed papers, patents, conferences and workshops attended, prizes awarded (e.g., professional, society, and honorary prizes). Additionally, there should be demonstrated progress in defining how research results will be transitioned into application.

Innovative Capabilities (2 to 5 years)

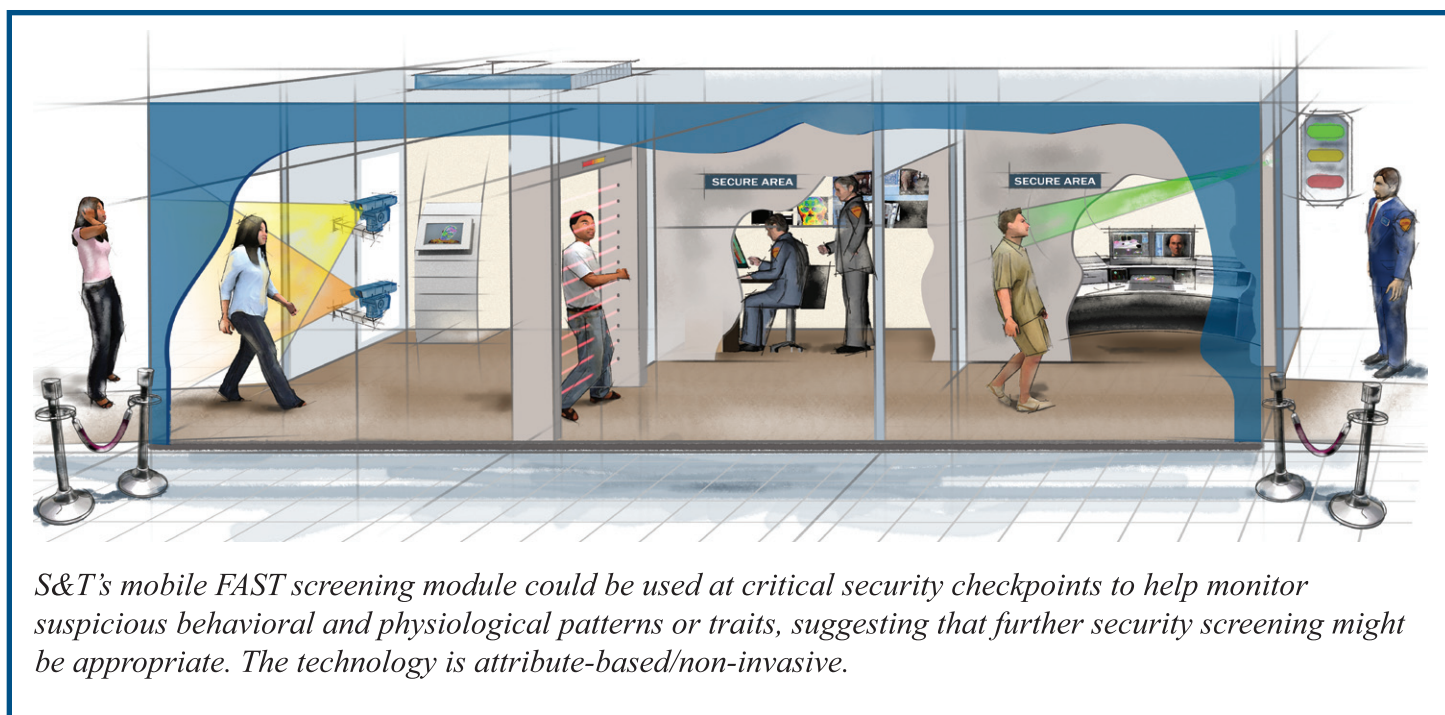
The S&T Directorate’s Innovation/HSARPA portfolio supports a key goal of putting advanced capabilities into the hands of our customers as soon as possible. It has made important inroads in research areas aligned with our DHS customers. Toward this end, the S&T Directorate has



introduced two important new initiatives. One of these, Homeland Innovative Prototypical Solutions (HIPS) is designed to deliver prototype-level demonstrations of game-changing technologies within two to five years. The second initiative, High Impact Technology Solutions (HITS), is designed to provide proof-of-concept solutions within one to three years that could result in high-payoff technology breakthroughs. While these projects are very high-risk, they offer the potential for “leap-ahead” gains in capability should they succeed. While projects are separately budgeted in “Innovation/HSARPA” (based on moderate to

The S&T Directorate also manages an active Small Business Innovative Research (SBIR) program on behalf of DHS. The Directorate issues two or more solicitations each year and generates multiple awards for the small business community. The solicitations address topics in areas that are aligned with the six technical divisions.

The HIPS and HITS portfolio is made up of projects that deliver either prototypes or proof-of-concept level demonstrations. To measure success, the Innovation portfolio will monitor the projects to ensure they are meeting cost,



S&T's mobile FAST screening module could be used at critical security checkpoints to help monitor suspicious behavioral and physiological patterns or traits, suggesting that further security screening might be appropriate. The technology is attribute-based/non-invasive.

high risk with a high payoff, if successful), all are executed within the six technical divisions. Because of the short timeline for HIPS and HITS, we anticipate that these projects could quickly provide solutions to fill DHS components' capability gaps. The highest risk “game changing” research is done in an Innovation group called “HOMEWORKS.”

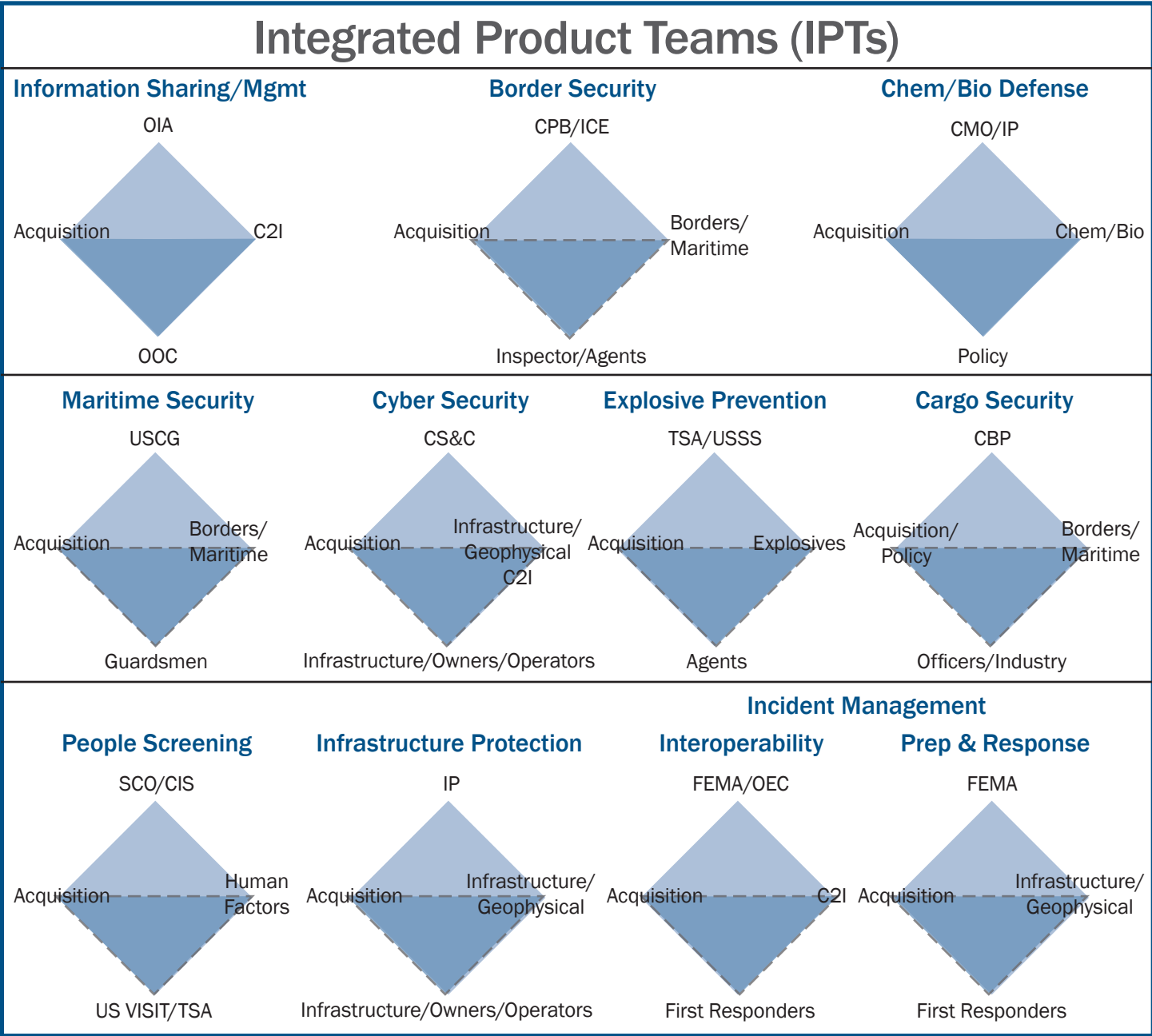
schedule, and performance goals through monthly technical and financial reports, quarterly reviews held by the program managers either at the vendor site or at DHS, and full program status briefings to the Under Secretary for S&T every six months.



Product Transition (0-3 years)

The S&T Directorate is committed to being customer-focused and to delivering capabilities that DHS components can rely on to meet their operational needs. To accomplish this, we facilitated customer-led Capstone Integrated Product Teams (IPTs) that are charged with identifying functional capability requirements across the Department. The products of these IPTs are used to influence and

inform the research and development (R&D) efforts of the S&T Directorate, and enable the Directorate to identify the highest priority needs and allocate resources to those programs that support the priorities established by the DHS customers. Tech Clearing House (“Tech Solutions”) provides technology information on products and services to facilitate our work, and provides direct connection to First Responder needs and ideas.





The S&T Directorate's new business model of structured Capstone IPTs ensures that product transition investments align to customer mission requirements. The Directorate facilitates the Capstone IPTs, providing subject matter expertise, administrative support and coordination.

Capstone IPTs will identify, validate, and prioritize capability requirements for S&T Directorate customers to define IPT investments in Enabling Homeland Capabilities. Capstone IPTs have been established for 11 major Homeland Security functional areas: information sharing/management, cyber security, people screening, border security, chemical/biological defense, maritime security, explosive prevention, incident management, interoperability, cargo security, and infrastructure protection.

The Capstone IPTs are led by senior leadership from DHS Components that have major equities in the corresponding functional area. Planning along functional lines rather than organizational structure helps to ensure a more integrated approach to developing technologies that support multiple components within the Department. Each

Capstone IPT works to identify, validate, and prioritize capability requirements across the Department (within a functional area) that the S&T Directorate can address. In addition to each division functioning as the technology provider, we include our other federal partners who also offer technology. Our customers use the IPT-generated information to define their acquisition investments in Enabling Homeland Capabilities (EHCs) – the S&T Directorate-proposed solutions are designed to meet identified capability requirements. The S&T Directorate's product transition process ensures that appropriate technologies are engineered and integrated into the DHS acquisition system for our customers.

The S&T Directorate's product transition process ensures that appropriate technologies are harvested and integrated into the DHS acquisition system for our customers. Capstone IPTs coordinate closely with all DHS stakeholders to develop the best EHC proposals to respond to customer capability requirements. EHC proposals are evaluated and assessed in an annual formal process that culminates in DHS senior leadership approval of EHCs determined to be the highest





priority for product transition investment. The venue for senior leadership review is a DHS-established Technology Oversight Group, chaired by the Deputy Secretary for Homeland Security. Upon DHS leadership approval of proposed EHC investments, Capstone IPTs monitor the progress of these programs through project-IPTs and during periodic program reviews. Project-IPTs coordinate the details associated with the technology transition as well as monitor the progress of individual efforts. The oversight process is transparent and includes provisions for: budget reviews; annual Capstone IPT transition status reports on all approved EHCs; and a detailed annual (at minimum) program review at the S&T Directorate level, which is open to the DHS community and other government and industry stakeholders at large.

One of the primary benefits of the Capstone IPT process is improved coordination across the Department to meet common functional missions through technology solutions. Additionally, the process of bringing together functional experts has identified promising solutions and opportunities for collaboration among components to meet the mission demands of the Department. The interaction of technologists and operators has improved the prioritization of efforts, and the focus on relevant, cost-effective solutions that make a significant difference. In addition, while the Capstone IPTs have the primary responsibility of overseeing and providing input to the Transition programs, the process also informs leadership about the challenges and concerns, and focuses both the Research and Innovation program areas.



S&T's Technology Clearinghouse and TechSolutions initiatives provide direct support to First Responders' technology needs to assist them in doing their jobs more rapidly, effectively and safely. The Technology Clearinghouse is designed to be a "one-stop shop" for access to technology information for Federal, State, and local Public Safety and First Responder communities; it will assist First Responders in making informed procurement decisions based on performance testing, accelerate the development of standards, and provide best practice forums to share tactics, training and procedures.

TechSolutions provides a web-based mechanism for First Responders to submit high priority capability gaps for rapid prototyping; the program responds by identifying existing technology that may meet the need, or if nothing is available, proceeding with the rapid prototyping of an appropriate solution to be fielded in less than one year.

A successful Transition portfolio requires sustained feedback from our customers to ensure our programs effectively address their capability gaps. Customer satisfaction surveys will allow the Components to communicate their overall level of satisfaction with the end-products/capabilities developed and transitioned from the S&T Directorate. The surveys will be tied to a measure that will be used to indicate the Directorate's outcome-based performance. Additional measures of success include Technology Readiness Levels (TRLs) that provide the needed capability in a timely manner at an affordable cost which ultimately enables the customer with mission capability.



ENABLING U.S. LEADERSHIP IN SCIENCE & TECHNOLOGY

In executing its portfolio of investments, the S&T Directorate will draw upon the research and development capability across the public enterprise, private sector, and academia to locate and promote the best R&D possible. This consortium of capability is referred to as the Homeland Security Research Enterprise. With the authorities provided in the Homeland Security Act of 2002, the S&T Directorate has the organic ability to leverage not only DHS laboratories, the Homeland Security Institute, and the DHS Centers of Excellence, but also the DOE National Laboratories to meet homeland security research requirements.

Additionally, to locate the best existing solutions or to find performers to develop appropriate homeland security technologies, the S&T Directorate has authority to use other government agencies' research resources including those of the Department of Defense (DoD), the National Institute of Standards and Technology (NIST), the Department of Health and Human Services (HHS), the U.S. Department of Agriculture (USDA), the Environmental Protection Agency (EPA), the Department of Justice (DOJ), the National Science Foundation (NSF), and DoD Federally Funded Research and Development Centers (FFRDCs), University Affiliated

Research Centers (UARC), as well as industry, international partners, and stakeholder associations.

Within the S&T Directorate, the Interagency Programs Division is responsible for coordinating with other Executive Branch agencies to reduce duplication and identify unmet needs, and to help the Department tap into science and technology communities across the government for solutions to counter domestic terrorism. The DHS Under Secretary for S&T co-chairs the National Science and Technology Council's Committee on Homeland and National Security (CHNS) with the DoD Director, Defense Research and Engineering, and a representative from the Office of Science and Technology Policy (Executive Office of the President). This Cabinet-level Council is the principal means within the Executive Branch to coordinate science and technology policy across the diverse entities that make up the Federal research and development enterprise. DHS subject matter experts also are assigned to appropriate subcommittees of the CHNS focused on different aspects of science and technology and working to coordinate across the federal government.





Finally, we also know that we must look beyond our Nation's borders for solutions in combating domestic terrorism. Since science and technology plays an ever-increasing role in global response to the threat of terrorism, the S&T Directorate is teaming with international partners. The diverse experiences and varied problem-solving strategies of other countries provide rich resources for U.S. efforts to seek solutions to the problems that exist irrespective of national boundaries and borders. To this end, the S&T Directorate has concluded numerous government-to-government Memorandums of Agreement (MOA) that provide an umbrella framework for cooperation to conduct joint research, development and evaluation; share data; leverage resources; and eliminate unnecessary duplication for the highest priority technologies. The S&T Directorate is continuing to move forward to negotiate additional MOAs with countries and international organizations of high priority.

The National Strategy for Homeland Security cites the Department as the lead for guiding the national research enterprise of companies, universities, research institutions, and government laboratories in conducting research and development on a broad range of issues. On behalf of the Department, the S&T Directorate will guide this Homeland Security Research Enterprise in fielding capabilities that support homeland security. In turn, the Directorate has access to the resources across the public and private sectors, improving its ability to address capability gaps. The following are examples of this valuable enterprise.

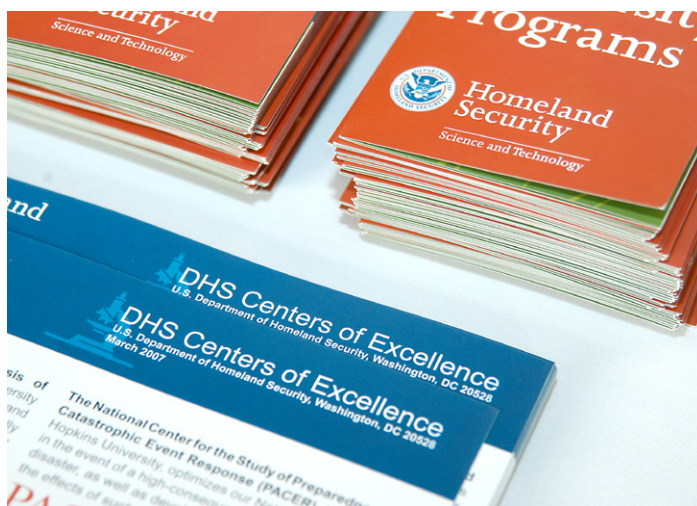
University Based Centers of Excellence

The S&T Directorate is reinventing a robust, results-oriented network of Homeland Security Centers of Excellence (COEs) to leverage the independent thinking

and ground-breaking capabilities of the Nation's colleges and universities. The COEs are conducting multidisciplinary research and education, each focused on an area critical to homeland security. The Office of University Programs is providing the communications and infrastructure to produce, share, and transition the Centers' research results, data, and technology to customers and end users.



Currently, COEs connect experts and researchers at more than 80 colleges and universities, including several Minority Serving Institutions (MSI). More than 20 partners representing industry, laboratories, think tanks, nonprofit organizations, and other agencies also participate. University Programs is coordinating COE efforts with other S&T Directorate-sponsored, university-based initiatives. Under the new S&T Directorate organizational construct, existing COEs are being strategically aligned with at least one Directorate division or to Directorate-wide activities, such as Operations Analysis and the Homeland Security Institute, in a structure that will best support the Divisions' fundamental research and development activities and other requirements.



The S&T Directorate will establish additional COEs over the next two fiscal years to help round-out the Directorate's need for university-based research. The new COEs will combine the research missions of some existing COEs and add new research areas under the division-aligned construct to meet DHS needs. We will establish new COEs in the areas of explosives detection, mitigation, and response; border security and immigration; maritime, island, and extreme/remote environment security; and natural disasters, coastal infrastructure and emergency management.

A competitive selection process ensures that diverse institutions of high quality and academic merit participate from as many geographical areas of the United States as practicable. Once the COEs are aligned, one third of the COEs will be re-competed every two years for a six-year term.

DHS Scholars and Fellows Program

DHS education programs are helping to attract and nurture future scientific leaders for the homeland security workforce and to strengthen the expertise of our existing labor pool. University Programs is engaging high-performing students through the DHS Scholars and Fellows

program. Increasingly, the S&T Directorate's scholarships and fellowships will become aligned to the Centers of Excellence and to the DHS mission. During this period of transition, we will honor our commitments to all currently participating Scholars and Fellows. Summer internships at DHS and National Laboratories between sophomore and junior, and junior and senior years will help reenergize our Nation's S&T workforce. Government service "pay back" after graduation may be a feature of the Scholars and Fellows program.

Office of National Laboratories (ONL)

In carrying out its mission, the S&T Directorate works to develop, sustain, and renew a coordinated network of DOE National Laboratories, Federal laboratories and University Centers needed by multi-disciplinary teams of scientists, engineers and academics to discover, develop and transition homeland security capabilities to operational end-users.

ONL provides the Nation with a coordinated, enduring core of productive science, technology and engineering laboratories, organizations and institutions, which can supply knowledge and technology required to secure our homeland. In addition to oversight of laboratory operations in direct support of the Department and its missions, ONL also has the specific responsibility for coordinating homeland security-related activities and laboratory-directed research conducted within the DOE National Laboratories.

Just as the university-based Centers of Excellence have been aligned to the DHS S&T Directorate organizational structure, DHS, DOE and other National Laboratories have been aligned to support one or more of the S&T six technical divisions. The S&T Directorate has coordinated with the Directors of the National Laboratories to develop



a new governance model that will leverage the validated core competencies of the Laboratories in support of the Directorate's basic research, transition and innovation priorities, and do so in competitive environment which best engages intra- and inter-Laboratory performers to address S&T's current and emerging needs.

Industry Participation in DHS Science & Technology

Industry is a valued partner of the S&T Directorate and its continued participation in developing solutions for homeland security applications is vital to our effort to safeguard the Nation. Consistent with the Directorate's new structure, our Innovation/HSARPA portfolio and six technical divisions will proactively seek industry participation to address specific challenges in their respective areas. For example, Innovation/HSARPA has recently posted Broad Agency Announcements (BAAs) seeking expertise in tunnel detection technologies, container security, and a mobile screening laboratory to support human screening research and development in the field. Many more are being announced on an ongoing basis.

The Support Anti-terrorism by Fostering Effective Technologies (SAFETY) Act of 2002, administered by the S&T Directorate, is proving to be a valuable tool in

expanding the creation, proliferation and use of cutting edge anti-terrorism technologies throughout the United States. The Office of SAFETY Act Implementation (OSAI) has made significant strides in reducing application processing time and providing more Qualified Anti-Terrorism Technologies (QATTs) that could save lives. Through increased efficiencies and process improvements, the average time to process SAFETY Act applications has

been reduced from 233 days in the early days of the program to less than 120 days in FY 2007.

As part of our outreach efforts to encourage greater industry participation, the Directorate plans to host two yearly Homeland Security Science and Technology Stakeholders Conferences in the U.S. (east and west coasts),

and one international event. These conferences will inform government, industry and academia of the direction, emphasis, and scope of the research investments by the S&T Directorate, and provide information about business opportunities. The conference will provide visibility into new and emerging technologies through an Innovation Gateway Marketplace. The Marketplace, held during the Stakeholders Conferences, gives industry the opportunity to meet with S&T staff, ask questions about our activities, see and show new technologies, submit ideas, and to discuss concepts that may support the Department's mission and goals.



S&T recently posted a Broad Agency Announcement seeking expertise in container security.



DEVELOPING OUR PROFESSIONAL WORKFORCE

As a knowledge-based organization, the S&T Directorate's most valuable resource truly is its people. We must have a professional team that can help us meet the dynamic challenges of science and technology research and education. Recruiting the highest quality workforce and the stability that results from an appropriate retention rate is vital to the long-term success of the S&T Directorate. To that end, we have developed an effective blend of highly qualified permanent government and visiting personnel (e.g., detailees from other government agencies, individuals assigned under the authority of the Intergovernmental Personnel Act (IPA), etc.), as well as a dedicated team of contract support employees. All of these categories of employees are important to the effective and efficient operation of the S&T Directorate. We have defined the needed positions based on our mission and organizational structure, and we plan to be fully staffed by the end of 2007.

A world-class Federal S&T management workforce is the foundation of the S&T directorate. They determine program scope, goals, milestones and deliverables, and manage the research providers associated with their projects to ensure that the government and the American people get top value for every precious S&T dollar. This level of responsibility requires that most S&T Federal employees be senior (GS-13/14/15 or equivalent). Because there is limited upward mobility within the S&T Directorate for these relatively senior employees, and because we are dedicated to their continued education and professional development, we

expect that S&T employees will become highly desired and potentially be recruited for positions of increased responsibility across DHS and the rest of the government. In order to retain them, it is incumbent upon S&T leadership to create a work environment and culture that makes an individual's decision to accept employment elsewhere very difficult. However, if an employee determines that it is in his or her best personal interest to leave S&T, S&T leadership will champion that cause; as S&T develops a reputation as a place where "good things happen to good people," more good people will follow, and the Directorate will remain strong.

The S&T Directorate's utilization of the IPA is consistent with the Federal government's policy as detailed in guidance provided by the Office of Personnel Management (OPM)



The Under Secretary for S&T, Jay M. Cohen, holds monthly "All Hands" meetings with the Directorate staff. Remote offices link to these meetings.



with particular attention to strict adherence to ethics, standards of conduct and conflict of interest provisions. S&T will generally use a broad and competitive process in an effort to select the best-qualified applicant for a vacant position. The authorities provided in the IPA allow S&T to complement the career Federal workforce with diverse, high-quality candidates possessing a wide variety of academic and professional backgrounds and demonstrated leadership skills. Absent extraordinary circumstances, we will not fill a career-reserved Senior Executive Service (SES) position using an IPA assignee. Career-reserved SES positions generally involve program management of grants and contracts that are often problematic for IPA assignees because of potential or perceived conflicts of interest as a result of their employment with their parent organizations or institutions.

Contract support employees are utilized within S&T to efficiently supplement the government staff in roles that are not inherently governmental, particularly in cross-organizational functional support areas. They work as an integral part of the S&T team, and are focused on developing a specific end-product based on their specific skills. They will exercise independent judgment and analysis while following the instructions in the Statement of Work of the relevant contract or task order.

We must ensure that our personnel have the skills and competencies required to succeed in a technologically changing environment, that we continuously develop our employees so that their skills never become outdated, that we acknowledge the very direct link between the job they do and the capabilities their work enables, and that we maintain an environment in which their contributions towards that end are recognized. Additionally, our world-class employees

deserve a world-class work place environment that will be the standard: advancement based on merit; reward for creativity and innovation; sub-par performance effectively addressed; a team motivated by leadership; recognition for a job well done; and information about what is going on within the organization.

The S&T Directorate supports the Department's initiatives, shown above, to enhance employee satisfaction and motivation. Consistent with the Department's goals, the Directorate is committed to a management approach that achieves the following goals within S&T:

We have embarked upon a strategy that will allow us to achieve our goals. Several examples of specific activities demonstrate that commitment.

The STORM

The Under Secretary has issued the first S&T Organization and Requirements Manual (STORM) that clearly defines functions, duties and responsibilities for the administration and management of the Directorate. The STORM also tells our customers who we are and how we function so they may better understand the capabilities we can bring to bear in support of their protective missions.

Improved Communications

All-Hands. To keep our staff informed of the plans for organizational realignment and provide a forum for asking questions and expressing their views and concerns, the Directorate holds "All-Hands" meetings at regular intervals, normally every four to six weeks, to brief all Directorate staff, including teleconference links with staff in other locations such as the Transportation Security Laboratory in Atlantic City, the Plum Island Animal Disease Center, and



the Environmental Measurements Laboratory in New York City. These meetings are also a forum to recognize staff achievements, answer questions, solicit input, and express gratitude for their excellent work and their cooperation.

Small-Group Discussions

To complement the All-Hands meetings, the DHS S&T Directorate Chief of Staff meets with smaller groups of the Directorate (a division or office – 10-25 people) biweekly in an informal setting. This provides an additional opportunity to pass information to the employees (such as how their efforts fit into DHS accomplishments), but more importantly it provides a forum for employee interaction with senior leadership at a more personal level than is possible at the All-Hands meetings. The primary goal of these gatherings is to allow employees to highlight resource shortfalls or cumbersome work practices that are impeding them in accomplishing their missions.



“S&T Snippets”

The S&T Corporate Communications group puts out, by e-mail, a mini-newsletter every few days called “S&T Snippets.” It includes news of general interest regarding the S&T Directorate.

Process Improvement Teams

To address organizational and process inefficiencies, appropriately constructed workforce teams analyze and implement process improvement in various functional areas. These teams have a common goal: remove organizational and procedural obstructions that hinder the Directorate’s ability to accomplish its mission.

Career Progression

Planning To ensure our S&T workforce has viable career opportunities within the Federal Service, we are developing individualized career plans for each Federal employee based on their interests, talents, and potential. These plans will incorporate necessary educational and professional development opportunities as well as professional certifications that will enhance their opportunity for advancement, and make the S&T Directorate a more effective and efficient organization.

Family Involvement

Our workforce spends a significant portion of their daily lives at work. It is important that they understand the S&T leadership recognizes they are more than employees, they are also husbands, wives, fathers, mothers, sons and daughters. The Directorate periodically conducts events (holiday parties, picnics, etc.) that include family members to help them gain a better appreciation for the contribution their loved one is making to our Nation’s safety.



SUMMARY

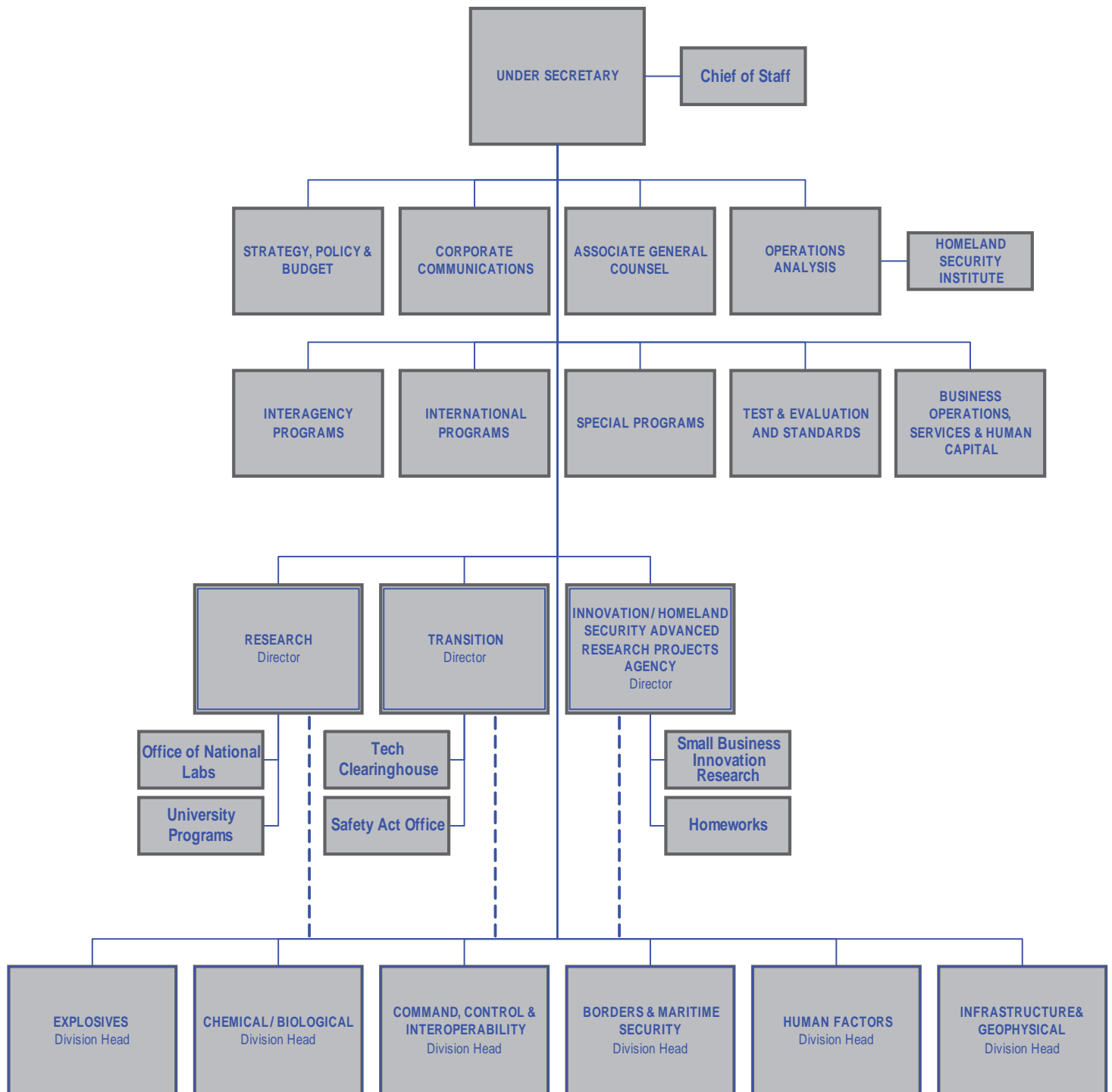
Our Nation's advantage in science and technology is a key to securing the homeland. To ensure we fully use this competitive edge, the S&T Directorate has undertaken major organizational changes designed to break down organizational barriers and foster greater inter-reliance among innovation, research, and transition programs. The strategy is to remain customer-focused and output-oriented – empowering customers to set priorities to meet the needs of tomorrow's homeland security – while proactively pursuing technology that could offer our DHS customers revolutionary means to better secure our Nation. With this focus, we can define what we will do for our customers, how we will do it, and how we will measure success.

Most importantly, we recognize our most valuable asset is not new equipment or technology, but rather our dedicated, flexible, and agile team of knowledgeable workers. Our workforce embraces personal characteristics of integrity, diversity, challenge to the ordinary, and brings diverse skill

sets to the Directorate's mission. We must therefore create a work environment in which our people are encouraged and rewarded for using initiative to anticipate and improvise to changing circumstances or sudden opportunities. This is a culture of organizational excellence that promotes a common identity, innovation, mutual respect, accountability and teamwork to achieve efficiencies, effectiveness and operational synergies.

This strategic plan outlines the four cornerstones of our strategic approach – our organization, our people, our financial systems, and the mixture of capability- and opportunity-based content of our programs that come to bear on fulfilling our responsibilities as established by the Homeland Security Act of 2002. They are the components of a business model and a strategy that allow us to address our customers' needs and pursue technology opportunities that eventually lead to capabilities that will make our Nation safer.

S&T Organization Chart



Approved 4/1/2007

The S&T Directorate Explosives Division will promote the development of effective techniques to protect our citizens and our country's infrastructure against the devastating effects of explosives by seeking innovative approaches in detection, and in countermeasures. It will provide the concepts, science, technologies and systems that will increase protection from explosives and will promote the development of field equipment, technologies and procedures to interdict suicide bombers, car and truck bombs, and shoulder-fired missiles before they can reach their targets.



The S&T Chemical/Biological Division will seek out the science needed to reduce the probability and potential consequences of a biological pathogen or a chemical attack on the Nation's civilian population, its infrastructure, or its agricultural system. S&T will develop and implement early detection and warning systems for attack characterization. Priorities include research and development efforts on urban monitoring, detection technologies, bioassays, a bioforensics capability, and restoration and response tools and technologies.



The attack on 9/11 demonstrated profoundly the danger to first responders and the public when those responding to emergencies cannot communicate effectively. The ability to talk across disciplines and jurisdictions systems, exchanging voice and/or data on demand, in real time, when authorized, is critically important, as is having disaster management plans to deal with crises. The S&T Directorate's Command, Control, and Interoperability Division addresses the intricately related issues of reliable day-to-day public safety communications, as well as the security of our cyber world.



The S&T Borders/Maritime Division will focus on preventing the entry of illegals and terrorists while ensuring an efficient flow of lawful commerce, visitors, and citizens. It will look at technologies to protect and strengthen our ports of entry, technologies that can prescreen all high-risk entities coming into the country, and at developing entry/exit tracking capabilities. Further, it will look at new technologies for detection, identification, and classification of high-interest vessels, and capabilities for wide-area monitoring of maritime traffic.



S&T will look at biometrics, motivation and intent, hostile intent, human factors engineering, and the social/behavioral/economic sciences to improve detection, analysis, and understanding of threats posed by individuals, groups, and radical movements. The efforts of the S&T Human Factors Division will support the preparedness, response and recovery of communities impacted by catastrophic events.



The need to protect the country's 17 areas of critical infrastructure from acts of terrorism, natural disasters, and accident, is also paramount, but so is state and local preparedness and response. S&T's Infrastructure/Geophysical Division will address physical, cyber, and human elements of our Nation's vulnerable infrastructure, focusing on capabilities, needs, and gaps, and on known threats.



In short, when dedicated scientists, engineers, and thinkers push the boundaries of challenge, and when they are committed to the security of our Nation, they can help ensure that new mission-critical capabilities are created, knowledge is generated, and needed technologies are deployed to the right places.

The greater mission of the Department of Homeland Security is to prevent terrorist attacks within the United States, reduce America's vulnerability to terrorism, and to minimize the damage and recover from attacks that may occur. The strategies the Science & Technology Directorate will use to accomplish those Department goals and make the Nation safer are listed above.

From Science and Technology... Security and Trust

S&T Contacts:

S&T-Explosives@dhs.gov

S&T-ChemBio@dhs.gov

S&T-C2I@dhs.gov

S&T-BordersMaritime@dhs.gov

S&T-HumanFactors@dhs.gov

S&T-InfrastructureGeophysical@dhs.gov

S&T-Research@dhs.gov

S&T-Transition@dhs.gov

S&T-Innovation@dhs.gov

